

02/14/14 Agenda:

- Review Homework
 - Worksheet 1 - Finding Interior Angle Sum
- Section 8.1 day 2 - Interior / Exterior Angle Sums
- Homework
 - Worksheet 2 - Interior & Exterior Angles of Regular Polygons

Section 8.1 - Finding Angle Measures in Polygons

Target 8B

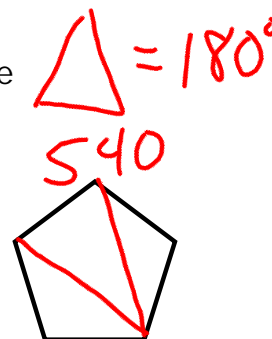
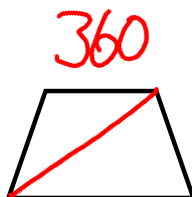
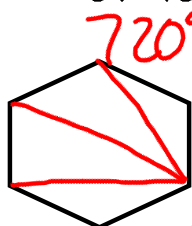
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Goal:

1. Find the sum of the exterior angles in a polygon.

Review:

Give the sum of the interior angles of the following polygons:



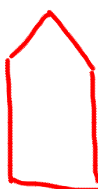
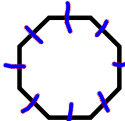
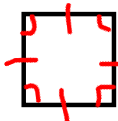
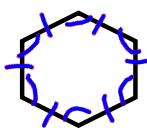
$$\triangle = 180^\circ$$

$$(n-2) * 180^\circ$$

Regular Polygons

vs.

Irregular Polygons



What is the difference?

What makes a polygon regular?

ALL SIDES \cong

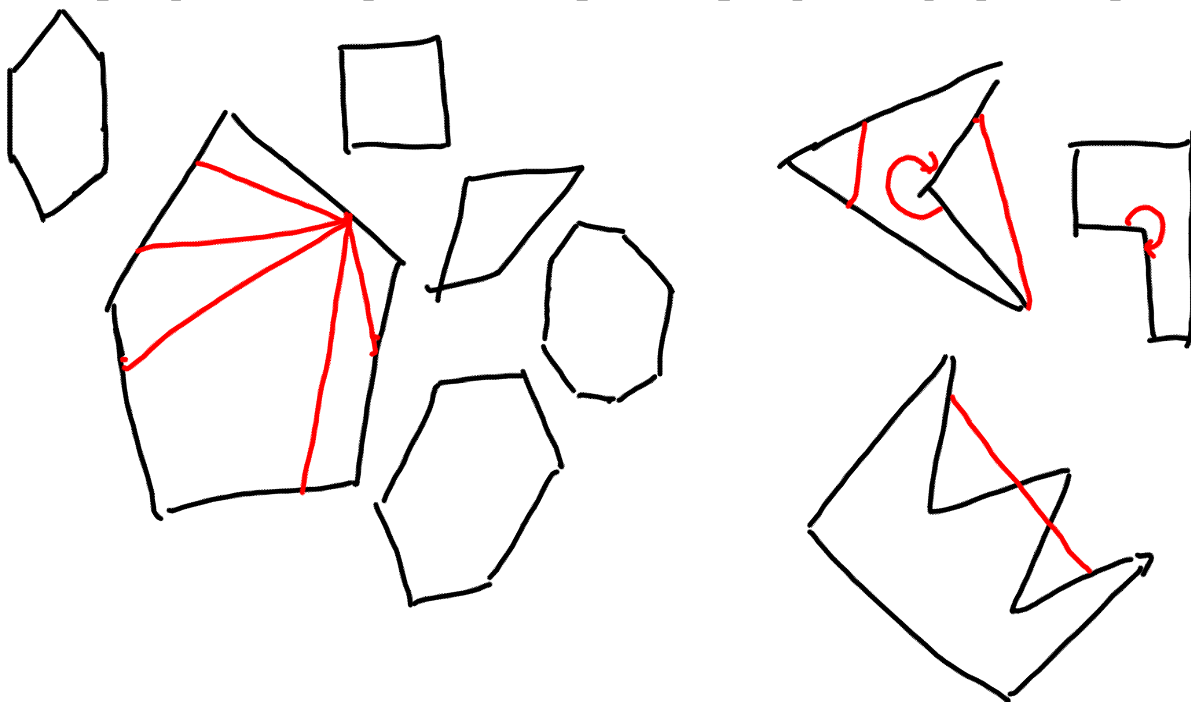
ALL ANGLES \cong

Section 8.1 - Finding Angle Measures in Polygons

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Convex vs. Concave



Section 8.1 - Finding Angle Measures in Polygons

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Regular Polygons: All angles are congruent & all sides are congruent

In a <u>regular</u> ...	The sum of the angles is:	Each angle is:
Quadrilateral SQUARE	$360 \div 4 =$	90°
Pentagon	$540^\circ \div 5 =$	108°
Hexagon	$720^\circ \div 6 =$	120°
Octagon	$1080 \div 8 =$	135°
n-gon		

Can we create a formula for the measure of an interior angle of a regular polygon?

$$\frac{(n-2) \cdot 180}{n}$$

$n = \# \text{ OF SIDES}$

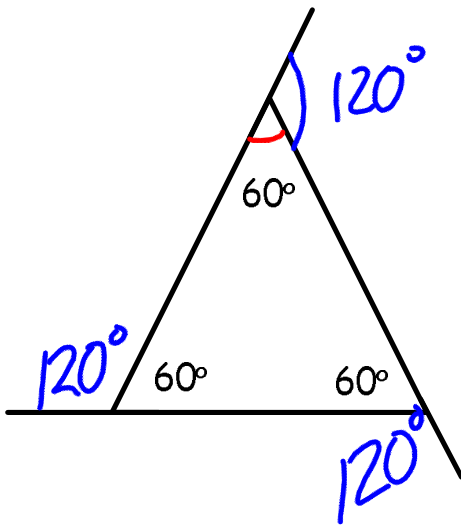
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Exterior Angles:

If we go back to our study of triangles, we know that exterior angles and interior angles are SUPPLEMENTARY

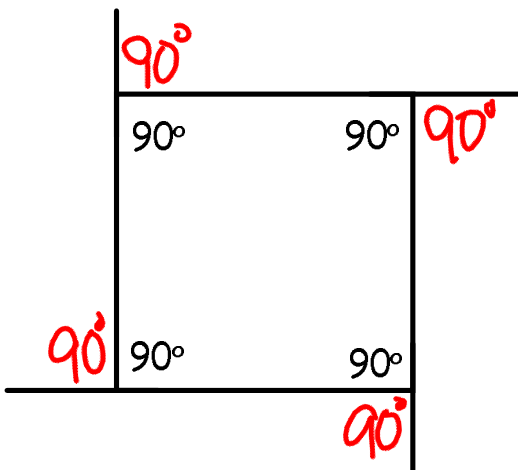


$$\begin{array}{r} 120 \\ 120 \\ 120 \\ \hline 360 \end{array}$$

Find the measure of each exterior angle.

What is their sum:

$$360^\circ$$



Find the measure of each exterior angle.

What is their sum:

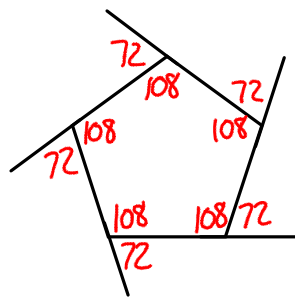
$$\begin{array}{r} 90 \\ \times 4 \\ \hline 360 \end{array}$$

$$360^\circ$$

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$$\begin{array}{r} 72 \\ \times 5 \\ \hline 360^\circ \end{array}$$



REGULAR POLYGON WITH
AN EXTERIOR ANGLE MEASURE OF

8 SIDES

45°

$$\frac{360^\circ}{45}$$

HOW MANY SIDES DO
THE POLYGON HAVE?

$$\frac{360}{\text{EXT. } \angle} = \# \text{ OF SIDES}$$

$$\frac{360}{45} = 8$$

GIVEN SUM OF INTERIOR \angle s
FIND THE # OF SIDES

$$\text{SUM OF INT. } \angle\text{s} = 1800$$

HOW MANY SIDES?

12

$$\frac{(n-2) \cdot 180}{180} = \frac{\text{SUM}}{180}$$

12

$$(n-2) = \frac{\text{SUM}}{180}$$

$$n = \left(\frac{\text{SUM}}{180} \right) + 2$$

$$\frac{900}{180} = 5$$

$$5 + 2 = 7 \text{ SIDES}$$